

Appl. No.: 09/731,945  
Reply under 37 C.F.R. § 1.116  
Art Unit 1732

### **REMARKS/ARGUMENTS**

First of all, the Examiner is thanked for his time and insight during a telephone conference on February 1, 2007, during which the teachings of the cited references were discussed in relation to the independent claims.

The Office Action dated January 24, 2007 has been carefully considered.

By this Amendment, Claims 28--33 have been canceled. Claims 13--15 and 18--27 and 34 are pending. It is respectfully submitted that this amendment is in accordance with 37 C.F.R. § 1.116 in that only claims are canceled (see 37 C.F.R. § 1.116(b)(1)).

Reconsideration of the application as amended is respectfully requested.

#### **Claim Rejections Under 35 USC § 103**

Claims 13, 20-22, 25, 27 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper (US patent No. 5,576,030) in view of Cochran (US patent No. 5,116,216).

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper (US patent No. 5,576,030) in view of Cochran et al. (US patent No. 5,116,216) and in further view of Lang et al. (US patent No. 6,406,659).

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper (US patent No. 5,576,030) in view of Cochran et al. (US patent No. 5,116,216) and in further view of Lang et al. (US patent No. 6,406,659) and White (US patent No. 5,427,725).

Claim 18 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper (US patent No. 5,576,030) in view of Cochran et al. (US patent No. 5,116,216) and in further view of Palmer et al. (US patent No. 4,942,013).

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Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper (US patent No. 5,576,030) in view of Cochran et al. (US patent No. 5,116,216) and in further view of Lang et al. (US patent No. 6,406,659) and White (US patent No. 5,427,725).

Claims 23 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper (US patent No. 5,576,030) in view of Cochran et al. (US patent No. 5,116,216) and in further view of Imanara (US patent No. 5,364,584).

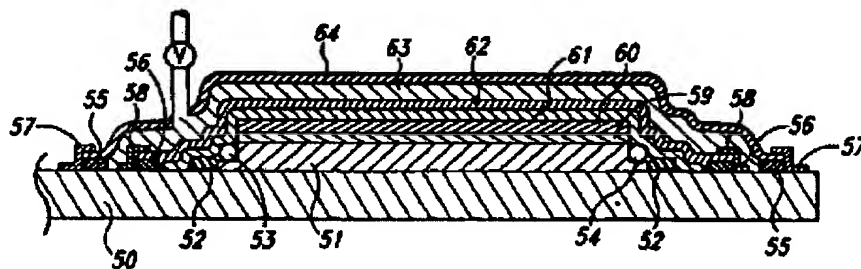
Claim 26 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper (US patent No. 5,576,030) in view of Cochran et al. (US patent No. 5,116,216) and in further view of Stoeberl (US patent No. 4,120,632).

The 35 U.S.C. § 103(a) rejections are respectfully traversed.

### Claim 13

Claim 13 recites a method for double vacuum chamber resin infusion. Among other steps, claim 13 states (with reference numerals added):

- sealingly bagging the preform (51) to the mold (50) with an inner bag (62) forming a first vacuum chamber;
- sealingly bagging the inner bag (62) to the mold (50) with an outer bag (64) forming a second vacuum chamber;



*Fig. 2*

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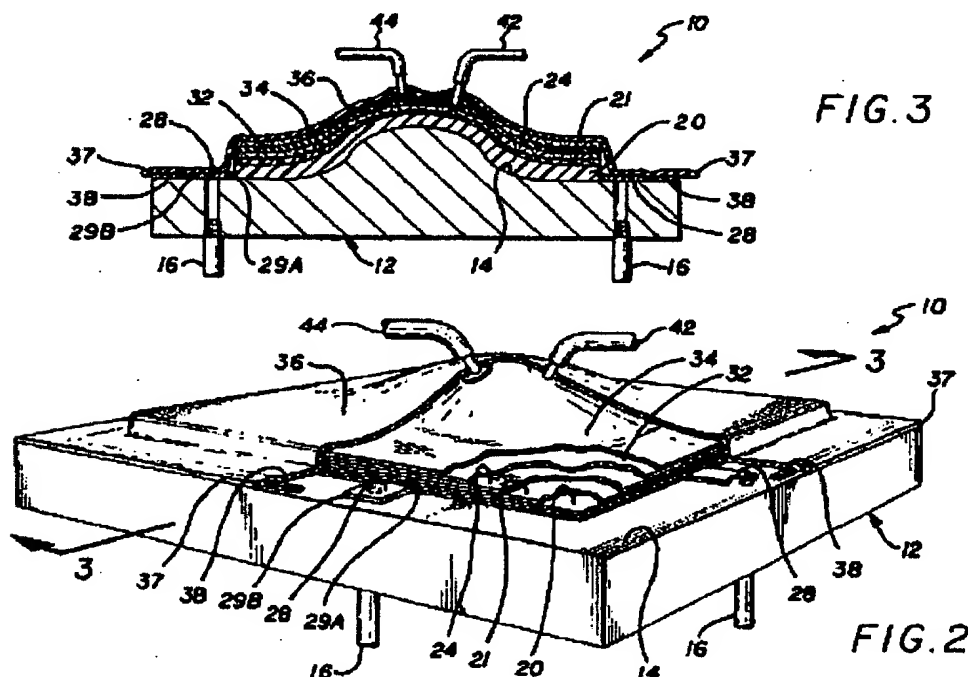
As can be seen in FIG. 2, the method of claim 13 includes the utilization of two bags (i.e., the inner and outer bags 62 and 64) each of which are sealingly bagged to a mold 50 to form two vacuum chambers.

It is respectfully submitted that none of the cited references teaches or suggests, among other things, the following features of claim 13:

1. sealingly bagging two bags to a mold; and
2. forming two vacuum chambers.

The Office Action dated January 24, 2007 states on page 2-3:

-Hooper ('030) teaches ... **sealing a first vacuum bag (32) against said mold (12) to form a first vacuum chamber, sealing a second vacuum bag against the mold (12), drawing a vacuum onto said first vacuum chamber using port (16), drawing a vacuum onto said second vacuum chamber using port (44) ... (emphasis added).**



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It is respectfully submitted that this characterization of the Hooper patent is erroneous.

As can be seen in FIGS. 2 and 3 from Hooper provided above, impervious flexible sheet (32) does not seal against mold (12) but rather appears to only extend to the edge of the layup (20). Accordingly, impervious flexible sheet (32) does not extend to the mold (12) and does not form a vacuum chamber. Indeed, Hooper confirms the same at col. 5, lines 4-12, by stating that impervious flexible sheet (32) has an area generally equal to the area of the lay-up 20.

Further, as impervious flexible sheet (32) does not seal layup (20) against mold (12), Hooper fails to teach or suggest a first vacuum chamber as recited in claim 13. One skilled in the art can understand that the impervious flexible sheet (32) of Hooper functions as a resin infusion barrier to prevent infused resin from migrating upwards away from layup (20) and into second sheet (34). Indeed, resin is infused through vacuum bag (36) and beneath impervious flexible sheet (32) via resin inlet port 42 and sealing tape (38) (see col. 5, lines 22-26).

Expanding on the lack of teaching or suggestion of two vacuum chambers, Hooper states that "an impervious sheet 36, generally referred to as 'vacuum bag' is placed over the second sheet 34 and sealed by its marginal edges 37 to the mold surface 14 by means of a sealing tape 38 forming a sealed chamber 40" (see col. 5, lines 17-21). Accordingly, the sealed chamber 40 is the only sealed chamber that Hooper teaches and, as such, Hooper has only one vacuum chamber, not two as recited in claim 13.

As further evidence of a single vacuum chamber, port (16) and port (44) of Hooper access the same sealed chamber 40 as shown in FIGS. 2 and 3 above (see col. 5, lines 4-33). In operation, while Hooper's port (40) is closed and resin inlet port (42) is open, air is initially withdrawn through port (16) to evacuate sealed chamber (40) and to draw the infused resin down into layup (20). Then port (16) and resin inlet port (42) of Hooper are closed and port (40) is opened, and a vacuum is drawn from the top of sealed chamber (40) (see col. 5, lines 41-58).

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It is respectfully submitted that Hooper clearly does not sealingly bag the preform to the tool with an inner bag to form a first vacuum chamber and sealingly bag the inner bag (62) to the tool (50) with an outer bag (64) forming a second vacuum chamber, as recited in claim 13.

Turning to Cochran, the Office Action states on page 3:

Cochran et al. ('216) teach a resin impregnation process including ... sealing a first vacuum bag (89) against said mold (12) to form a first vacuum chamber, sealing a vacuum cover (93) against said mold (12) to form a second vacuum chamber ...

It is respectfully submitted that this characterization of the Cochran patent is erroneous. It is respectfully submitted that, like Hooper, Cochran teaches sealing only one vacuum bag to the mold, not two as recited in claim 13. The outer-rigid vacuum chamber 93 of Cochran is sealed to the flexible vacuum bag 89, not to the mold as recited in claim 13.

Accordingly, it is respectfully submitted that a prima facie case of obviousness has not been established by the Patent Office because the cited references do not provide any suggestion on how to combine or modify the references, with the combination or modification being sufficient to render Claim 13 obvious to one of ordinary skill in the art. Therefore, it is respectfully submitted that Claim 13 is patentable over the Hooper and Cochran patents and is in a condition for allowance.

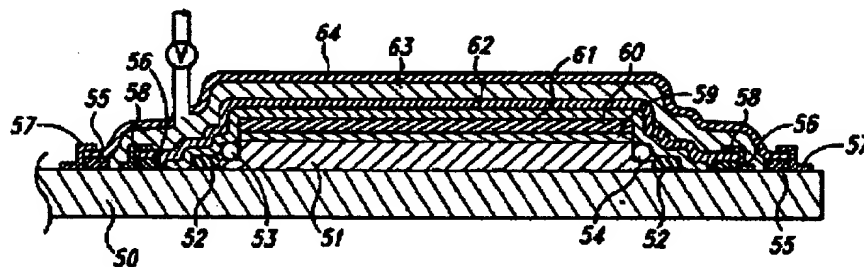
Claim 14, 15, and 18-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hooper (US patent No. 5,576,030) in view of various combinations of Cochran et al. (US patent No. 5,116,216), Lang et al. (US patent No. 6,406,659), White (US patent No. 5,427,725), Palmer et al. (US patent No. 4,942,013), Imanara (US patent No. 5,364,584), and Stoeberl (US patent No. 4,120,632). Each of these claims depends from Claim 13. For reasons analogous to those presented above in relation to claim 13, it is respectfully submitted that each of the cited references, either alone or in combination, fails to teach or suggest the respective methods of claims 14, 15, and 18-27.

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**Claim 34**

Claim 34 recites a method for double vacuum chamber resin infusion. Among other steps, claim 34 states (with reference numerals added):

bagging the preform (51) to the mold (50) with an inner bag (62) forming a first vacuum chamber;  
bagging the inner bag (62) to the mold (50) with an outer bag (64) forming a second vacuum chamber;  
evacuating the first vacuum chamber;  
evacuating the second vacuum chamber ....



***Fig. 2***

The Hooper patent is discussed above. In contrast to claim 34, Hooper does not teach or suggest bagging with inner and outer bags to form first and second vacuum chambers. Accordingly, it is not possible for Hooper to evacuate the first and second vacuum chambers as recited in claim 34. As discussed above, Cochran et al. also fail to teach or suggest this feature of claim 34.

Accordingly, it is respectfully submitted that a prima facie case of obviousness has not been established by the Patent Office because the cited references do not provide any suggestion on how to combine or modify the references, with the combination or modification being sufficient to render the method of claim 34 obvious to one of ordinary skill in the art. Therefore,

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it is respectfully submitted that claim 34 is patentable over the Hooper and Cochran patents and is in a condition for allowance.

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### CONCLUSION

In view of the foregoing, and the remarks presented above, it is respectfully submitted that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact the undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 18-1730.

Respectfully submitted,



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